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For the latest version of specification, please refer to www.beny.com or contact to benyi@zjbeny.com
We reserve the right to explain the terms of specification.



RAPID SHUTDOWN SAFETY SOLUTION

WWW.BENY.COM



COMPANY INTRODUCTION

BENY new energy offers a reliable and robust electric fast charger with an attractive design that is easy to own and operate, with high quality power electronic components. It is a powerful charging station that can deliver up to 262 kW, with CCS1/CCS2/CHAdeMO/AC charging outlets.

We are a leading brand in annually producing hundreds of thousands of quality DC protection products and EV charging stations for complete and reliable solar photovoltaic, battery energy storage, and EV charging system. Certified by UL, SAA, CB, CE, TUV, UKCA, ISO, and RoHS, we have the first listed patented DC switch and produce creative solutions like the AFCI solution for rooftop fire protection, dynamic load balancing, and PEN fault detection EV charger.

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Solar Module Level Rapid Shutdown Safety Solution

BFS Series



CE RoHS





- Module Level Rapid Shutdown
- Manual Shutdown by button switch
- Automatic Shutdown on AC Power Loss
- Over temperature Automatic Shutdown
- Compatible with most string inverters and panels
- No cross-talk with inverter or WIFI

Application

BFS-11/BFS-12 is a module level rapid shutdown device offers fire safety for solar rooftop and building, remains the rapid shutdown function period the solar PV system whole working life.

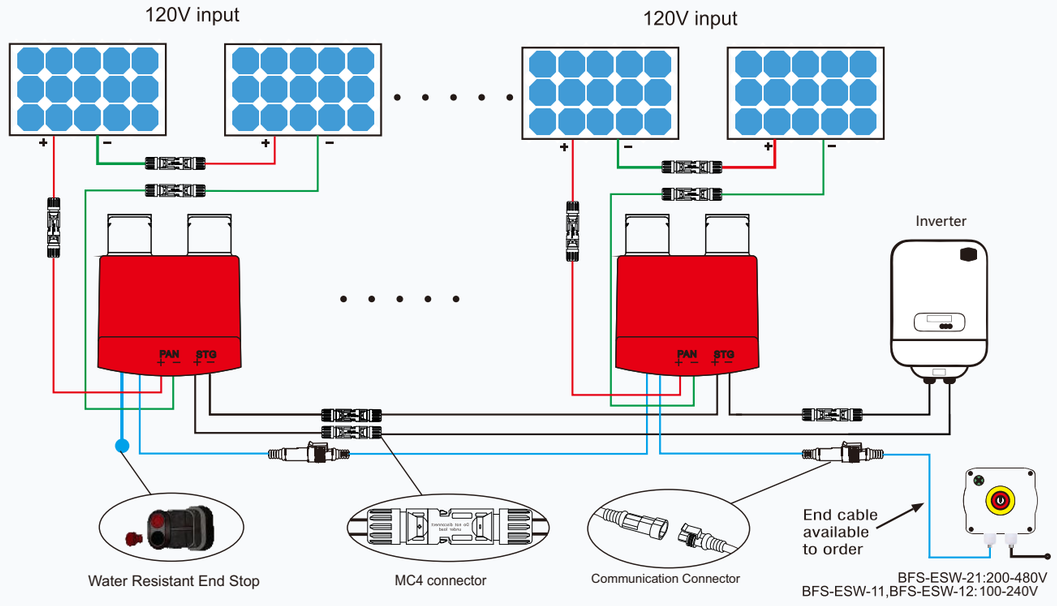
Emergency button switch is required to initiate the rapid shutdown operating, as a trigger place on the ground and easier to reach.

The communication cable on the rapid shutdown device should be connected in series and wire to the button switch. So the button switch can control the BFS rapid shutdown devices.

A communication that is no cross-talk with the inverter or WIFI source.

BFS-11 RSD Specifications

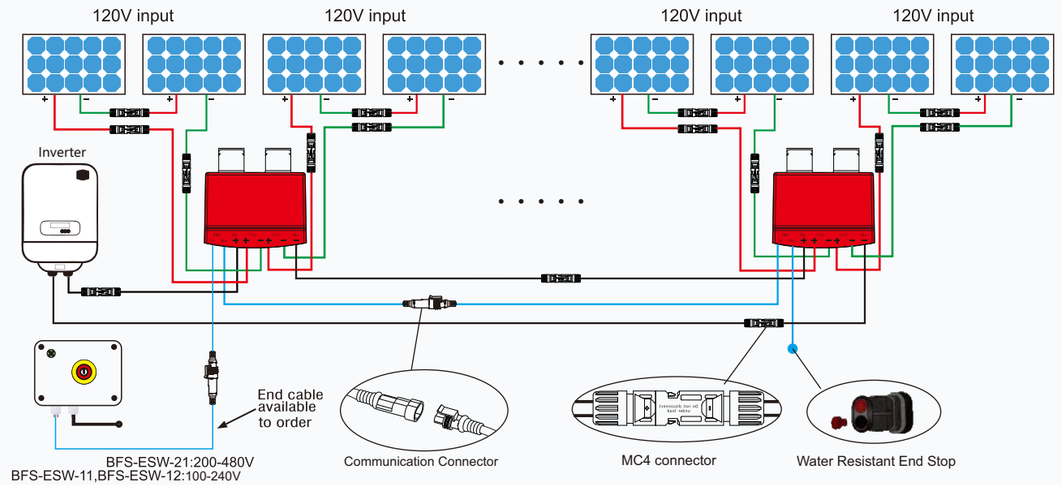
Model	BFS-11	
Maximum Input Voltage	120V Single Panel (Voc) or 60V Two Panels (Voc) (Two Panels In Series)	
Maximum Input Current	18A(Isc)	20A(Isc)
Maximum Power	2160W in total	2400W in total
PV Input and Output Cables	4.0mm²(12AWG) Cables + MC4 Connectors	
PV Input Cables Length	180mm	
PV Output Cables Length	1800mm	
IP Protection	IP68	
Operating Temperature	-40°C to +85°C	
Ambient Operating Temperature	-40°C to +55°C	
Standard Compliance	EN 62109-1:2010, EN 61058-1:2018	
PV Connectors	Staubli MC4 (Standard) Jinko connectors for option	
DC Power Supply for each RSD		
Voltage Range	14V ~ 28V	
Maximum Current	8mA	
Maximum Power	0.15W	
Power Supply Cables (Signal Cables)	2x0.823mm² (18AWG) Signal Cables + Signal Connectors	
Power Supply Cables Length	1800mm	



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BFS-11 RSD Specifications

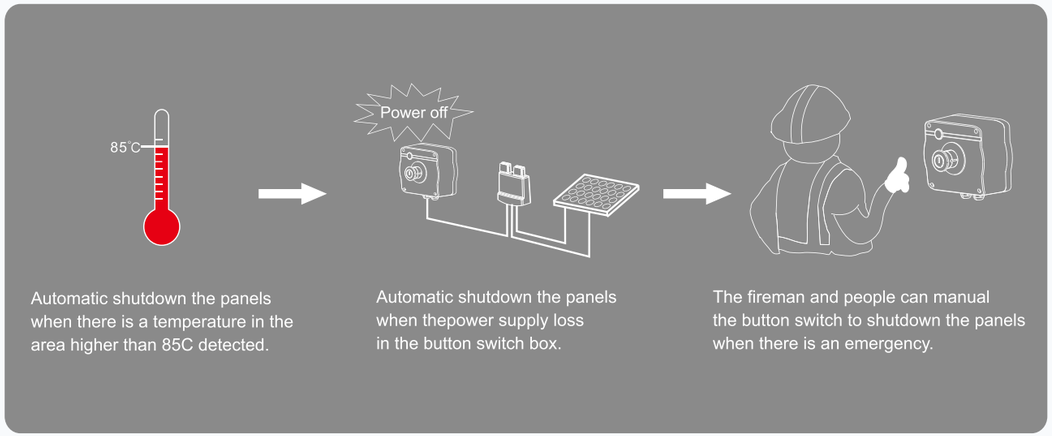
Model	BFS-12	
Maximum Input Voltage	240V in total (Input 1 + Input 2)	
Maximum Voltage each Input	120V Single Panel (Voc) or 60V Two Panels (Voc) (Two Panels In Series)	
Maximum Input Current	18A(Isc)	20A(Isc)
Maximum Power	4320W in total (Input 1 + Input 2)	4800W in total(Input 1+ Input 2)
PV Input and Output Cables	4.0mm²(12AWG) Cables + MC4 Connectors	
PV Input 1 Cables Length	180mm	
PV Input 2 Cables Length	300mm	
PV Output Cables Length	1800mm	
IP Protection	IP68	
Operating Temperature	-40°C to +85°C	
Ambient Operating Temperature	-40°C to +55°C	
Standard Compliance	EN 62109-1:2010, EN 61058-1:2018	
PV Connectors	Staubli MC4 (Standard) Jinko connectors for option	
DC Power Supply for each RSD		
Voltage Range	14V ~ 28V	
Maximum Current	12mA	
Maximum Power	0.2W	
Power Supply Cables (Signal Cables)	2x0.823mm²(18AWG) Signal Cables + Signal Connectors	
Power Supply Cables Length	1800mm	



Each BFS-11/BFS-12 device can hold solar modules output max: 1200V total, the modules connect in series as solar string goes to inverter as PV system designing. One more thing on the rooftop is the connection of BFS-11/BFS-12 RSD and button switch via communication cable.

Note: If your market requires NEC2017/NEC2020 requirement, we recommend one RSD BFS-11 connects 1 panel(≥40V) or 2 panels(<40V); BFS-12 connects 2 panels(≥40V) or 4 panels(<40V).

A Complete RSD Solution



Automatic shutdown the panels when there is a temperature in the area higher than 85C detected.

Automatic shutdown the panels when thepower supply loss in the button switch box.

The fireman and people can manual the button switch to shutdown the panels when there is an emergency.



Emergency Shutdown Switch



The Emergency Switch offers the manual shutdown of solar panels on the rooftop by pushing the button.
AC power from grid or AC side at solar inverter both could be the power source for the emergency switch.

And when the AC power loss, automatic rapid shutdown the DC panels at the meantime.
(The green light is ON only indicate the AC power supply is live).

Emergency Button Switch Specifications

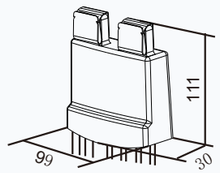
Model	BFS-ESW11(-K)	BFS-ESW12(-K)	BFS-ESW21(-K)
Input Voltage Range	100~240VAC		200V~480VAC
Maximum Working Current	0.5A	0.88A	0.7A
Input Frequency Range	47~63Hz		
Rated Output Voltage	24VDC		
Maximum Output Current	315mA	750mA	1250mA
Maximum Output Power	7.06W	18W	30W
Power Supply Cables	0.823mm² / 18AWG		
Cables Torque	0.5 NM/4.5lbin		
DIN Terminal Connector Wiring	0.5-4mm²/26AWG–10(Note:BFS-11/ BFS-12 uses communication connector 2x0.823mm²)		
DIN Terminal Torque	0.5-0.8Nm/4.5-7lbin		
Ambient Operating Temperature	-30°C to +70°C		-30°C to +85°C
Maximum BFS-11 Units	40 Units	90 Units	90 Units
Maximum BFS-12 Units	20 Units	45 Units	45 Units
Maximum Distance (First RSD to the Emergency Button Switch)	150m		

Ordering Information

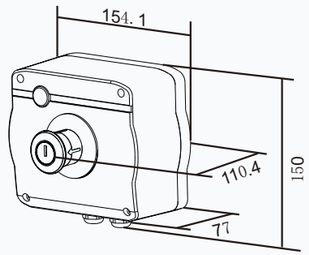
Model Number	Description
BFS-11	Rapid Shutdown Unit for solar panel(s) 120V input
BFS-12	Rapid Shutdown Unit for solar panel(s) 2 x 120V input
BFS-ESW11	Emergency Button Switch for BFS-11/ BFS-12. (100-240V AC power input).
BFS-ESW12	Emergency Button Switch for BFS-11/ BFS-12. (100-240V AC power input).
BFS-ESW11-K	Emergency Button Switch with Key Lock for BFS-11 / BFS-12. (100-240V AC power input).
BFS-ESW12-K	Emergency Button Switch with Key Lock for BFS-11 / BFS-12. (100-240V AC power input).
BFS-ESW21	Emergency Button Switch for BFS-11 / BFS-12. (200V-480V AC power input).
BFS-ESW21-K	Emergency Button Switch with Key Lock for BFS-11 / BFS-12. (200V-480V AC power input).
BFS-CCABLE	20m signal cable with female connector for end of string.
BFS-CCABLES	2m signal cable with male and female connectors for between strings or panels.

Install Dimension

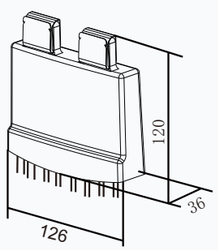
Unit: (mm)



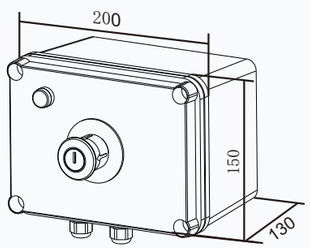
BFS-11



BFS-ESW11-(K)/BFS-ESW12-(K)



BFS-12



BFS-ESW21-(K)

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CASE STUDY: Philippines with 1.2MW solar installation.







CASE STUDY: Pampanga, Philippines 1.3MW.

SunSpec Solar Module Level Rapid Shutdown Safety Solution





Application

The BFS-21 is designed and developed as the most reliable module level rapid shutdown device for solar building fire safety and meeting the NEC requirements. Operates SINGLE standard PV module (≥ 40V) or Two modules (<40V).

The BFS-21 complies with NEC 2017&2020 690.12 rapid shutdown requirements when work with the SunSpec signal transmitter BFT-01 or an inverter with built-in transmitter, in non-interference with the inverter AFCI.

BFS-21 Specications

Electrical	
Range of Operatong Voltage:	120V input
Max operating current (A dc):	18A
Max. input power(W):	2160W total
Max. array short circuit current (A dc):	18A
Output DC Voltage(V dc):	120V
Rated Max. output current (A dc):	18A
Communication:	PLC(DC Power Line),SunSpec certicate Microsecond response RSD

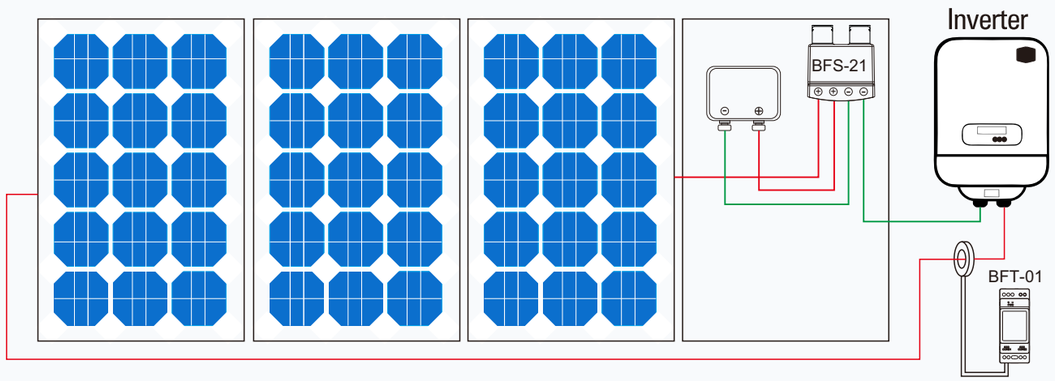
Mechanical	
UL 50 E Enclosure Type Rating:	4X
Connectors:	MC4(standard),Jinko connectors for option
Input Cable Length:	180mm
Output Cable Length:	1800mm
Weight:	600g

Environmental	
Operating Temperature:	-40°C to- +80°C
Ambient Operating Temperature:	-40°C to- +55°C
Over Temperature Protection:	85°C
Certicate and Standards:	UL 1741 PVRSS and PVRSE listed , NEC 2014/2017/2020 690.12

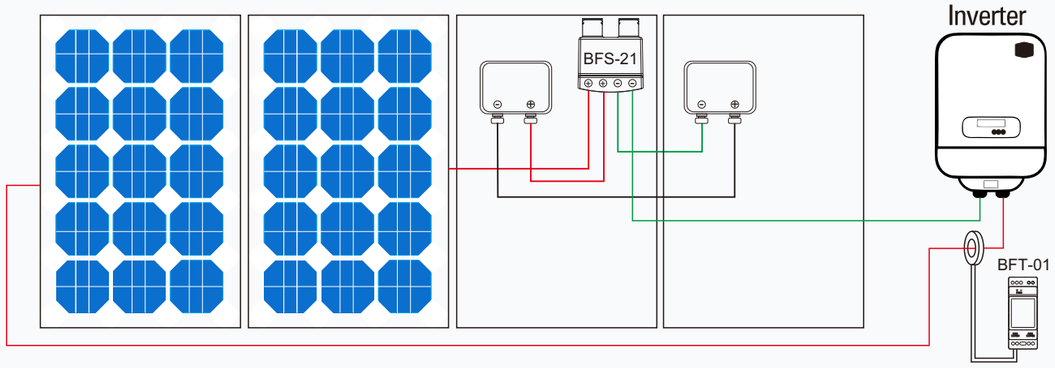
Rapid Shutdown initiate of BFS-21 requires RSD transmitter as a complete solution.

How to intall the RSD:

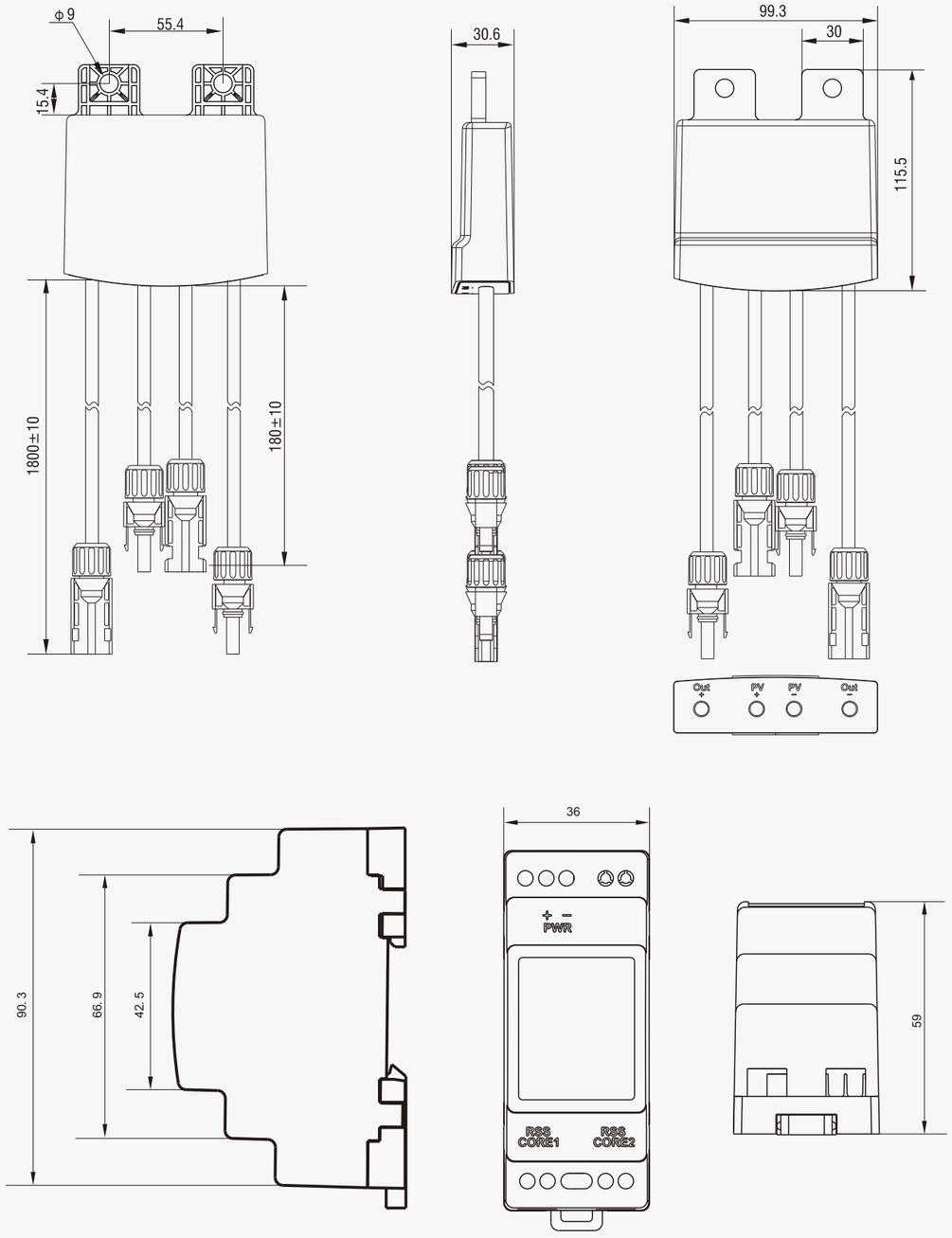
Panel Voltage≥40V



Panel Voltage<40V



Dimension





Application

The BFS-22 is designed and developed as the most reliable module level rapid shutdown device for solar building fire safety and meeting the NEC requirements.Operates TWO standard PV module (≥40V) or FOUR modules (<40V).

The BFS-22 complies with NEC 2017&2020 690.12 rapid shutdowr requirements when work with the SunSpec signal transmitter BFT-01 on an inverter with built-in transmitter, in non-interference with the inverter AFCI.

BFS-22 Specications

Electrical	
Range of Operatong Voltage:	120V per input(total 2 inputs)
Max operating current (A dc):	18A
Max. input power(W):	2160W per input (total 2 inputs)
Max. array short circuit current (A dc):	18A
Output DC Voltage(V dc):	240V
Rated Max. output current (A dc):	18A
Communication:	PLC(DC Power Line),SunSpec certicate Microsecond response RSD

Mechanical	
UL 50 E Enclosure Type Rating:	4X
Connectors:	MC4(standard),Jinko connectors for option
Input Cable Length:	PV1:160mm; PV2:180mm
Output Cable Length:	1800mm
Weight:	715g

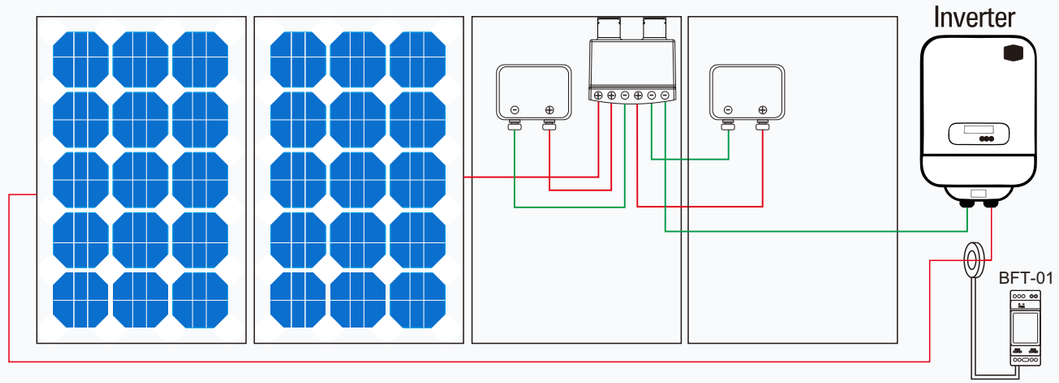
Environmental	
Operating Temperature:	-40°C to- +80°C
Ambient Operating Temperature:	-40°C to- +55°C
Over Temperature Protection:	85°C
Certicate and Standards:	UL 1741 PVRSS and PVRSE listed , NEC 2014/2017/2020 690.12

Rapid Shutdown initiate of BFS-22 requires RSD transmitter as a complete solution.

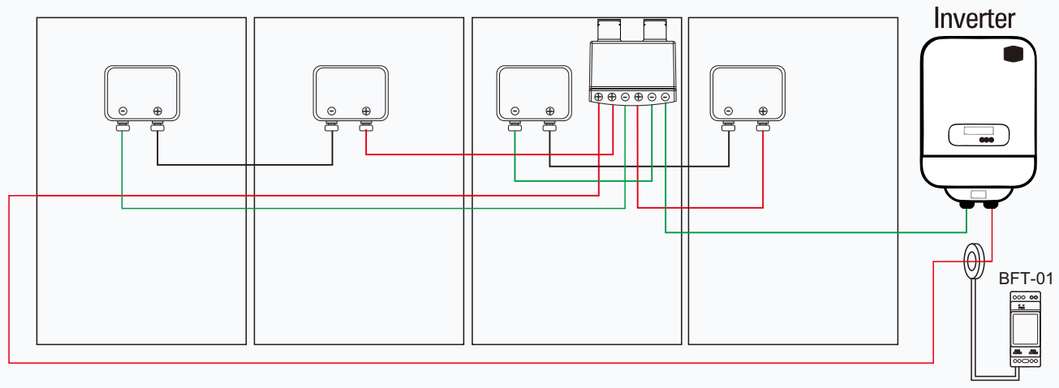
ZBENY

How to intall the RSD:

Panel Voltage≥40V

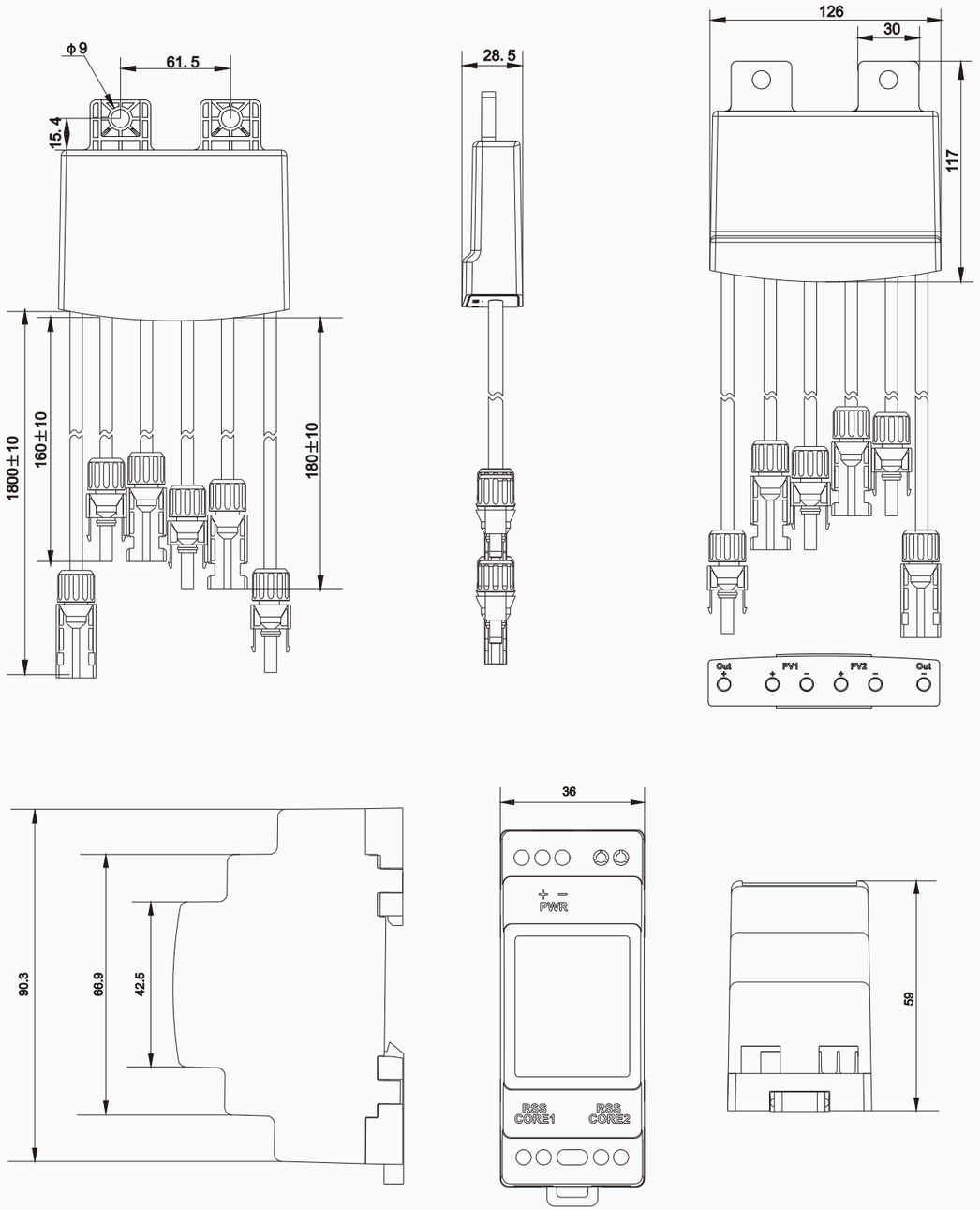


Panel Voltage<40V



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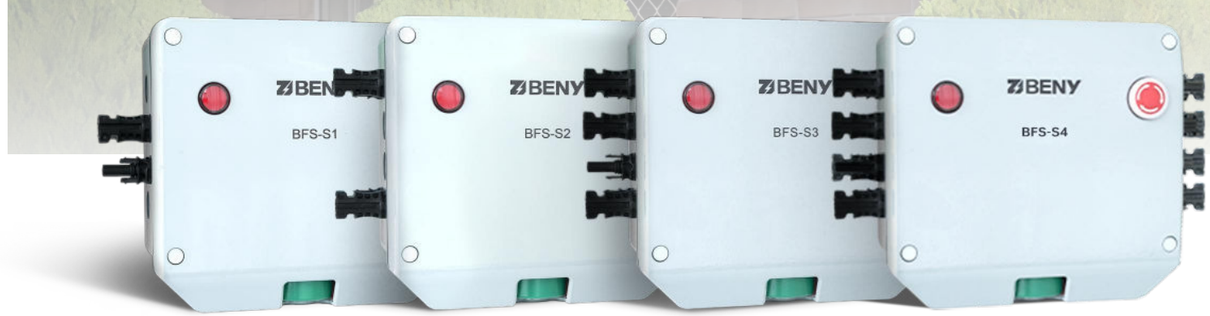
Dimension



Fire Fighter Safety Switch for Solar Building

Automatic DC Power Shutdown

AC Power Manual Shutdown



Application

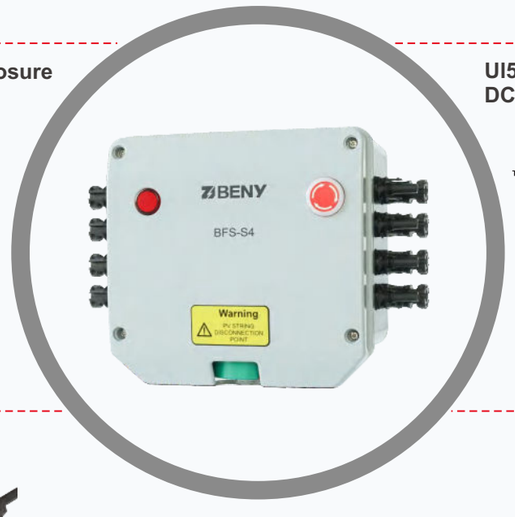
ZBENY The BFS-S Series Firefighter Safety Switch is a DC Isolation Solution for solar rooftop fire safety, providing DC power mechanical and complete isolation in the event of a fault. Make a safe area and operating space to protect the firefighter from DC electric shock. As the firefighter cut off the AC power in the house, the safety switch will disconnect the DC power at the sametime.

- String Level Rapid Shutdown
- Up to 1500VDC, 50A per string
- Plug and Play for easy installation
- No cross-talk with inverter or Wifi
- Compatible with most string inverters and panels

Features

IP66 Aluminum enclosure with breathing valve

IP66



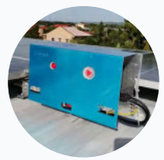
UI508i listed and IEC PV2 DC switch built-in

TÜVRheinland

Genuine MC4 Plug and Play



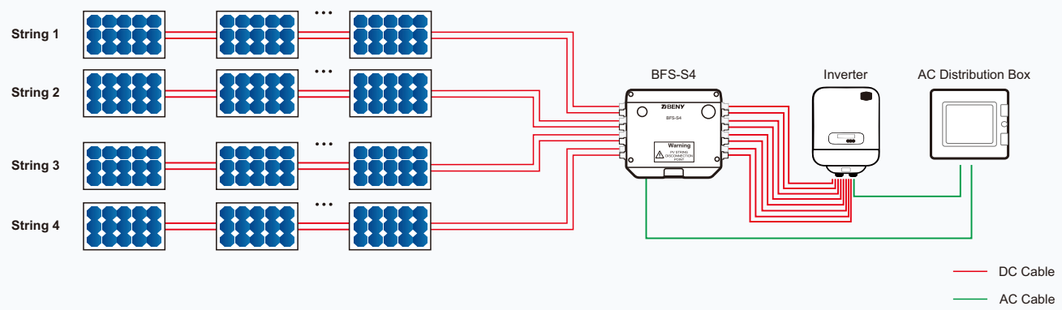
Protection cover for rooftop installation is available



Specifications

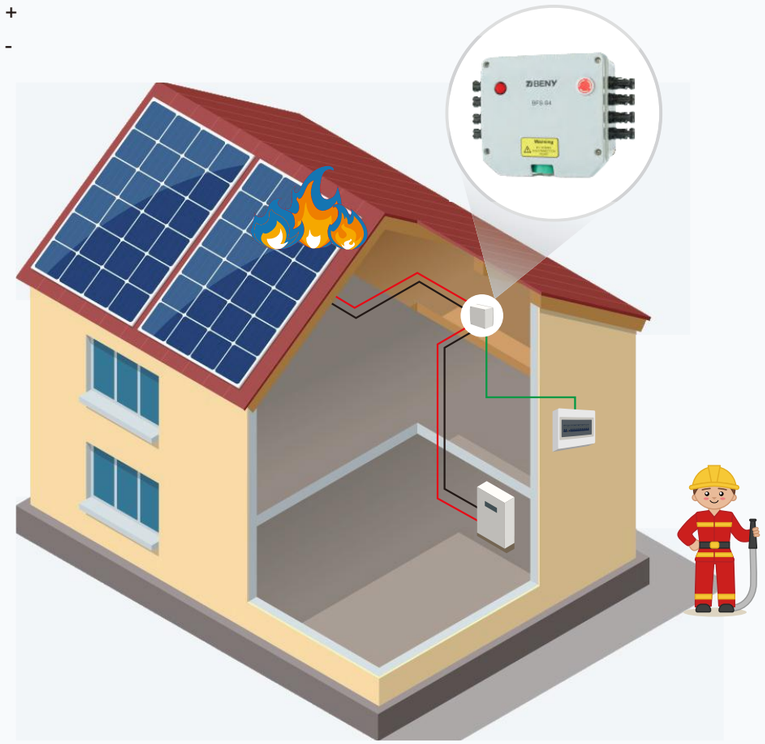
Models	BFS-S			
Models	BFS-S1	BFS-S2	BFS-S3	BFS-S4
Number of Strings	1 string	2 strings	3 strings	4 strings
				
Max String Voltage(Vdc)	300V-1500V			
Max String Current(A)	50A			
Operating Voltage	90Vac-260Vac			
Nominal Voltage	230Vac			
Nominal Current	30mA			
Start up Current	average 100mA			
Switch on Action Current	Max 300mA			
Standard Compliance	IEC / EN 60947-3			
Protection Degree	IP66			
Storage Temperature Allowed Between	-40˚C~+85˚C			
Operating Temperature Range	-20˚C~+50˚C			
Maximum Operating Temperature Before Automatic Switch OFF	+85˚C			
Protection Level	Class II			
Mechanical Endurance	9700			
Electrical Endurance	300			

Diagram



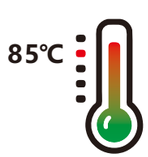
How the solution works?

DC Cable +
DC Cable -
AC Cable



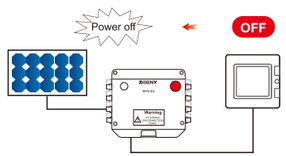
Shutdown Mode

Automatic Shutdown When Over Temperature



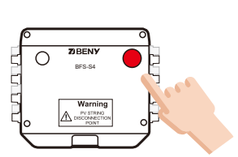
Automatically OFF the DC Power, when temperature inside of BFS-S enclosure ≥ 85°C.
Once temperature drop to ≤ 75°C, DC power will be back automatically.

Automatic Shutdown When AC Power Loss



Automatically OFF the DC Power, when AC Power is loss accidently or manually turn off by firefighter, so to make safety zone for firefighters.
Once AC Power is back, DC Power will be back automatically.

100% Shutdown By Emergency Button



Press the emergency button to keep DC Power 100% OFF even when AC Power is back, so to keep a total safety zone for firefighters.

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Dimensions

